

WHAT IS CLAIMED IS:

1 1. 1. A feed system for an aerosolizer, the feed system comprising:
2 a feed system housing having an ampoule region that is adapted to receive an
3 ampoule that contains a liquid and that includes a bottom end and a top end, and a liquid
4 receiving region that is adapted to receive liquid dispensed from the ampoule, wherein the
5 liquid receiving region includes an overflow region that extends along side the ampoule
6 region above the bottom end of the ampoule; and
7 an interface that is adapted to couple the liquid receiving region to an aerosol
8 generator, whereby liquid from the liquid receiving region is permitted to flow to the aerosol
9 generator for aerosolization.

1 2. A feed system as in claim 1, wherein the liquid receiving region
2 includes a tapered bottom end with a drain opening to funnel liquid from the ampoule to the
3 aerosol generator.

1 3. A feed system as in claim 2, wherein the interface is adapted to
2 produce a seal between the bottom end of the liquid receiving region and the aerosol
3 generator.

1 4. A feed system as in claim 2, wherein the feed system housing includes
2 a top portion and a bottom portion having the tapered bottom end, wherein the top portion is
3 attachable to the bottom portion, and wherein the ampoule region and the overflow region
4 comprise two elongate channels extending through the top portion.

1 5. A feed system as in claim 4, further comprising an o-ring seal
2 positioned between the top portion and the bottom portion.

1 6. A feed system as in claim 1, further comprising a lid coupled to the
2 feed system housing that is adapted to secure the ampoule within the ampoule region.

1 7. A feed system as in claim 6, wherein the lid includes a slot that is
2 adapted to receive a top tab that extends from the top end of the ampoule.

1 8. A feed system for an aerosolizer, the feed system comprising:

2 an ampoule containing a liquid, wherein the ampoule has a top end and a
3 bottom end;
4 a housing having an ampoule region into which the ampoule is held, and a
5 liquid receiving region that is adapted to receive liquid dispensed from the ampoule;
6 an interface that is adapted to couple the liquid receiving region to an aerosol
7 generator, whereby liquid from the liquid receiving region is permitted to flow to the aerosol
8 generator for aerosolization.

1 9. A feed system as in claim 8, wherein the liquid receiving region
2 includes an overflow region that extends along side the ampoule region above the bottom end
3 of the ampoule.

1 10. A feed system as in claim 8, wherein the liquid receiving region
2 includes a tapered bottom end with a drain opening to funnel liquid from the ampoule to the
3 aerosol generator.

1 11. A feed system as in claim 10, wherein the interface is adapted to
2 produce a seal between the bottom end of the liquid receiving region and the aerosol
3 generator.

1 12. A feed system as in claim 10, wherein the feed system housing
2 includes a top portion and a bottom portion having the tapered bottom end, wherein the top
3 portion is attachable to the bottom portion, and wherein the ampoule region and the overflow
4 region comprise two elongate channels extending through the top portion.

1 13. A feed system as in claim 12, further comprising an o-ring seal
2 positioned between the top portion and the bottom portion.

1 14. A feed system as in claim 8, further comprising a lid coupled to the
2 housing to secure the ampoule within the ampoule region.

1 15. A feed system as in claim 14, wherein the ampoule includes a top tab
2 extending from the top end, and wherein the lid includes a slot through which the top tab
3 extends.

1 16. A feed system as in claim 15, wherein the top tab is removable to form
2 a vent opening in the top end of the ampoule.

1 17. A feed system as in claim 8, wherein the ampoule includes a bottom
2 tab extending from the bottom end, and wherein the bottom tab is removable to form a drain
3 opening in the bottom end of the ampoule.

1 18. A feed system as in claim 12, wherein the ampoule includes a bottom
2 tab extending from the bottom end, and wherein the bottom tab extends distally beyond the
3 top portion of the housing, and wherein the bottom tab is removable prior to connection of
4 top portion with bottom portion to form a drain opening in the ampoule.

1 19. An aerosolization device, comprising:
2 a device housing having an interior and an exit opening;
3 an aerosol generator disposed within the device housing to eject an aerosolized
4 liquid through the exit opening;
5 a liquid feed system disposed within the device housing, the liquid feed
6 system comprising a feed system housing having an ampoule region that is adapted to receive
7 an ampoule that contains a liquid, a liquid receiving region that is adapted to receive liquid
8 dispensed from the ampoule, and an interface that couples the liquid receiving region to the
9 aerosol generator, whereby liquid from the liquid receiving region is permitted to flow to the
10 aerosol generator for aerosolization.

1 20. A device as in claim 19, wherein the liquid receiving region includes
2 an overflow region that extends along side the ampoule region above the bottom end of the
3 ampoule.

1 21. A device as in claim 19, wherein the liquid receiving region includes a
2 tapered bottom end with a drain opening to funnel liquid from the ampoule to the aerosol
3 generator.

1 22. A device as in claim 21, wherein the interface includes a seal member
2 to produce a seal between the bottom end of the liquid receiving region and the aerosol
3 generator.

1 23. A device as in claim 19, wherein the aerosol generator includes a seal
2 member to produce a seal between the aerosol generator and the interface.☒

1 24. A device as in claim 21, wherein the feed system housing includes a
2 top portion and a bottom portion having the tapered bottom end, wherein the top portion is
3 attachable to the bottom portion to permit the top portion to be removed from the device
4 housing, and wherein the ampoule region and the overflow region comprise two elongate
5 channels extending through the top portion.

1 25. A device as in claim 24, further comprising an o-ring seal positioned
2 between the top portion and the bottom portion.

1 26. A device as in claim 19, further comprising a lid coupled to the feed
2 system housing that is adapted to secure the ampoule within the ampoule region.

1 27. A device as in claim 26, wherein the lid includes a slot that is adapted
2 to receive a top tab that extends from the top end of the ampoule.

1 28. A device as in claim 19, wherein the aerosol generator comprises a
2 vibratable member having a plurality of apertures and a vibratable element to vibrate the
3 vibratable member.

1 29. An aerosolization system in kit form, comprising:
2 an aerosolization device comprising a device housing having an exit opening,
3 an aerosol generator held within the housing to provide an aerosolized liquid through the exit
4 opening, and a liquid receiving portion of a liquid feed system; and
5 a liquid feed system receiver unit having an ampoule containing a liquid to be
6 aerosolized, wherein the receiver unit is insertable into the aerosolization device to couple
7 with the liquid receiving portion.

1 30. A kit as in claim 29, wherein the receiver unit includes an ampoule
2 region having the ampoule and a liquid overflow region adjacent to the ampoule region for
3 receiving overflow liquid from the liquid receiving portion.

1 31. A kit as in claim 29, wherein the ampoule has a top end and a bottom
2 end, a top tab extending from the top end that is removable to form a vent opening, and a
3 bottom tab extending from the bottom end that is removable to form a drain opening.

1 32. A kit as in claim 31, wherein the receiver unit has a bottom end with an
2 opening that is sized to permit the bottom tab to extend through the bottom end of the
3 receiver unit.

1 33. A kit as in claim 31, wherein the receiver unit has a top end with an
2 opening that is sized to permit the top tab to extend through the top end of the receiver unit.

1 34. A kit as in claim 29, further comprising an o-ring seal positioned
2 between the receiver unit and the liquid receiving portion.

1 35. A kit as in claim 29, wherein the liquid receiving portion has a tapered
2 bottom end that is operably coupled to the aerosol generator.

1 36. A kit as in claim 29, wherein the aerosol generator comprises a
2 vibratable member having a plurality of apertures and a vibratable element to vibrate the
3 vibratable member.

1 37. A method for aerosolizing a liquid, the method comprising:
2 inserting an ampoule containing a liquid into an aerosolization device having a
3 liquid feed system, an aerosol generator, and an exit opening;
4 opening the ampoule to permit liquid from the ampoule to drain into a liquid
5 receiving region of the feed system; and
6 operating the aerosol generator to eject liquid droplets through the exit
7 opening.

1 38. A method as in claim 37, further comprising removing a bottom tab
2 from the ampoule to form drain opening before inserting the ampoule into the aerosolization
3 device.

1 39. A method as in claim 37, wherein the ampoule is held within a receiver
2 unit of the liquid feed system, and further comprising inserting the receiver unit into the
3 aerosolization device and coupling the receiver unit with the liquid receiving region.

1 40. A method as in claim 39, further comprising removing the receiver unit
2 from the aerosolization device following operation of the aerosol generator and discarding the
3 receiver unit.

1 41. A method as in claim 40, further comprising cleaning the aerosol
2 generator following removal of the receiver unit.

1 42. A method as in claim 37, further comprising removing a top tab from
2 the ampoule to form a vent opening after inserting the ampoule into the aerosolization device.

1 43. A method as in claim 37, wherein the feed system includes an
2 overflow region adjacent to the ampoule and further comprising permitting excess liquid to
3 flow into the overflow region.

1 44. A method as in claim 37, further comprising vibrating an aperture plate
2 of the aerosol generator to produce the liquid droplets.

1 45. A method for aerosolizing a liquid, the method comprising:
2 inserting a receiver unit of a liquid feed system unit into an aerosolization
3 device having an aerosol generator, wherein the receiver unit includes an ampoule containing
4 a liquid, and wherein the receiver unit is inserted until coupled to a liquid receiving region of
5 the feed system that is interfaced with the aerosol generator;
6 opening the ampoule to permit liquid from the ampoule to drain into the liquid
7 receiving region; and
8 operating the aerosol generator to eject liquid droplets from the aerosolization
9 device.

1 46. A method as in claim 45, further comprising removing a bottom tab
2 from the ampoule to form drain opening before inserting the receiver unit into the
3 aerosolization device.

1 47. A method as in claim 45, further comprising removing a top tab from
2 the ampoule to form a vent opening after inserting the receiver unit into the aerosolization
3 device.

1 48. A method as in claim 45, wherein the receiver unit includes an
2 overflow region adjacent to the ampoule and further comprising permitting excess liquid to
3 flow into the overflow region.

- 1 49. A method as in claim 45, further comprising vibrating an aperture plate
- 2 of the aerosol generator to produce the liquid droplets.